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ACUTE INTESTINAL OBSTRUCTION*

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The presentation of this subject was not prompted by any hope that it might add anything to the voluminous literature on the subject, but rather by a desire to keep before you a condition which is amenable to treatment, but which in spite of this fact has a very high mortality.

No age is exempt from acute intestinal obstruction, as the newborn child may have obstruction due to malformation or failure of development, while the older child and adult present a multiplicity of possible causes, ranging from congenital defects in the young to carcinoma in the aged. Among causes of obstruction are congenital atresia, congenital bands, intussusception, worms, volvulus, tumors within or outside lumen of bowel, adhesions, inflammatory or postoperative, fecal impaction, gall-stones, appendicitis and hernia.

Orr and Haden[1] have done some interesting experimental work, determining the chemical changes in blood occurring in intestinal obstruction. Using dogs in which they produced obstruction they found a constant rise in the non-protein nitrogen and urea nitrogen, a fall in the chlorides, and a rise in the carbon dioxide combining powers of the plasma. The animals lived from five to nineteen days. In a second series, where an obstruction of the jejunum was produced and jejunostomy done simultaneously, the length of life varied from three to five days, and the chemical changes developed rapidly and were typical of those found in high intestinal obstruction. In another series the animals were subjected to the same procedure and treated with sodium chloride from the beginning of the experiment. In this series they did not show the chemical changes in the blood characteristic of jejunal obstruction, and lived from three to twelve days. In another series jejunostomy was not done until development of toxemia. The animals developed characteristic blood changes and duration of life was from four to fourteen days. In still another series, in which jejunostomy was not done until toxemia developed, but was followed by the administration of sodium chloride, the animals developed the chemical changes characteristic of obstruction and lived from thirteen to eighteen days. This was followed by the interesting experiment of performing a simple jejunostomy upon dogs that lived only from two to five days, and which showed a decrease in the blood chlorides and a rapid rise in urea and non-protein nitrogen. Orr and Haden also found a rise in the non-protein nitrogen and a dimunition in the chlorides of the urine.

Many theories have been suggested as a probable cause of death in acute intestinal obstruction, and the intestinal contents and the blood have been subjected to thorough investigations without acceptable explanation. The theory that death is due to bacteremia does not hold true since the blood and organs are sterile following death from obstruction. The theory that the offended intestinal mucosa secretes a chemical poison has not been proven. The theory that death is due to toxemia is the one that has received almost universal acceptance, but the exact cause of the toxemia remains to be determined. Dragstedt et al.[2] found that the normal bowel mucosa had a selective protective action against toxins, but in intestinal obstruction the walls were rendered more pervious to toxins because of impaired nutrition. Williams of London[3] made an investigation upon the assumption that toxemia was due to anærobic organisms in the intestinal tract. Bacillus Welchii was the most abundant and most constant of toxin producers, and were present in the obstructed bowel in enormously increased quantities. The presence of bacillus Welchii in the contents of the bowel was demonstrated by animal inoculations. Of thirty-two inoculated mice lethal effects were obtained in twenty-one. As a test of the presumption, mice were treated with antitoxin serum and a marked improvement followed. It is also interesting to note that marked improvement followed the use of antitoxin serum in cases of paralytic ileus. Saito[5] is of the opinion that the pancreatic juices display the most powerful toxic activity at the moment of flowing into

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the duodenum, and that the bile, on the other hand, plays a physiologic part by inhibiting this toxicity of the pancreatic secretion. In fatal cases of intestinal obstruction toxic substances which are formed in the duodenum by activation of the pancreatic juices are absorbed through the mucous membrane and given entrance into the circulation, the inhibiting activity on the part of the bile being insufficient. He is also of the opinion that the real cause of the rapid death of animals with a duodenal obstruction should be sought in the perverted condition of the small intestine, mainly below the obstruction.

Gerard,[6] in his review of literature and in his investigations, thinks that poisons may be developed in the absence of food, bile and pancreatic and gastric juices, and in the absence of a secretion peculiar to any portion of the intestine, therefore the toxicity must be due to products of protein decomposition. The most important of these derived products — proteoses, peptones, kyrins, vasodilatines and the amins — being formed by bacterial action, and include many poisonous substances.

Stone[7] found that in obstructed loops of intestine, so prepared that they did not contain food, bile, pancreatic and gastric juices, there was formed a material, which when diluted and sterilized and injected into animals, produced a characteristic effect.

The cause of death in acute intestinal obstruction is probably due to a form of chemical intoxication, the production of which is not definitely understood.

The successful termination of intestinal obstruction depends upon the alertness of the physician in charge during the first hours of the illness, and though it is not always an easy matter to make a diagnosis, he should have the symptoms of this condition forever in the forefront as a warning, which if disregarded means so much to the patient.

The onset is usually marked by pain, which is more or less general. This is frequently followed by evacuation of the lower bowel, which will sometimes mislead the physician as well as the patient. Vomiting is a constant symptom, first of the stomach contents, then intestinal contents. The pain in intestinal obstruction is colicky in character, which differs from pain due to damaged or offended peritoneum which is constant in character. The pain in intestinal obstruction is due to distended bowel and nature's effort to overcome the obstruction, and we would expect to find evidence of this peristalsis in audible rumbling, or borborygmus above the point of obstruction. We sometimes find visible peristalsis, which differentiates from paralytic ileus where we have visible coils without peristalsis. The patient's temperature remains about normal and the pulse rate and volume good. It is in this stage that diagnosis should be made and treatment instituted. Every case with pain, vomiting, obstipation and borborygmus should be considered as a case of intestinal obstruction until proven otherwise. As the disease progresses the patient may become fairly comfortable, which again may mislead the physician, the mind keenly alert, pulse rate begins climbing and temperature dropping, extremities become cold, and skin clammy. These are symptoms of the terminal stage, and death soon intervenes.

The treatment is always surgical and should be considered urgent. The longer the obstruction has existed, the higher the mortality, and the more important[8] the diligent care of the patient. One must not be misled by the evacuation of the lower bowel or by the return of feces following enema and the temporary relief this often affords. Chemical examinations of the blood should be made every few hours in questionable cases, as an aid in determining the extent of treatment.

In cases in which toxemia has developed saline solution should be given, by hypodermoclysis, before operation, and as the patient is being prepared for operating table glucose should be given intravenously, followed by insulin hypodermatically. All cases should receive gastric lavage before operation and duodenal tube left in place during the operation. If operated on early, all patients may have general anesthetic, but in late cases local anesthesia should be used. It is difficult, however, to make thorough examination of distended abdomen under a local anesthesia, and gas oxygen anesthesia may be added if deemed advisable. Free incision should be made to permit examination of intestines with as little effort as possible, and the site of obstruction should be quickly found and cause of obstruction and condition of bowel determined. If early operation is being made, that is within the first six or eight hours, removal of cause is all that is required, and abdomen may be closed. If, however, the gut is distended with fluids, an enterostomy should be done. If the viability of

the gut is questionable and the patient's general condition is poor, the involved segment should be delivered and an enterostomy of the normal bowel done. It is here that the judgment of the surgeon is taxed, as the mortality is so high in late cases we are inclined to criticize ourselves for either doing too much or not enough.

Postoperative treatment is very important and should be begun immediately. This consists of administration of saline solution by hypodermoclysis and by rectum, and of glucose solution intravenously. Gastric lavage should be done as soon as patient recovers from anesthetic, and in cases where resection has not been done, two ounces of castor oil introduced through tube.

Summary: The cause of death in intestinal obstruction has been the subject of careful investigation without explanation of universal acceptance. We are dealing with a condition in which, if treatment is instituted early, it is fairly satisfactory, but if late, it is very unsatisfactory. The responsibility in the majority of cases rests first upon the physician, as the outcome of the case depends upon early recognition. The surgical treatment depends upon the degree of toxemia and the condition of the gut, and demands sound judgment on the part of the surgeon. Not infrequently patients who have intestinal obstruction have the assurance that operation will restore them to health and happiness, but a few hours later we find that health has not been restored and happiness a matter of conjecture.

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PERITONITIS COMPLICATED WITH ACUTE ILEUS*

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The treatment of peritonitis and its complications has been one of the "bugbears" of the abdominal surgeon for many years. One procedure after another has come into vogue but most of them have been discarded after due trial. During the past year at the Sarasota Hospital we have had several cases of general peritonitis, most of them complicated with acute or marked ileus; all but three died. In discussing these cases with one of my colleagues, I made the remark, that hereafter I would perform an enterostomy, at the time of operation, on all doubtful cases; that is, in cases which showed marked peritoneal involvement and more or less ileus.

Victor Boney[1] writes: "I hold strongly that all cases of paralytic obstruction, whether primary or secondary to an organic obstruction or to a peritonitis, when advanced to the stage of fecal, or short of fecal, intestinal vomiting, should be treated by jejunostomy. By making an opening into the jejunum, in a case of fecal or intestinal vomiting, the source of the vomit is directly tapped and free drainage of the toxic material is established. No patient should be allowed to die with fecal vomiting, if it is possible to perform this operation."

Dr. Donald McCrae,[2] in a recent article, makes the following statement: "I have now practically discarded drainage of the general peritoneal cavity, but have established, almost as a routine, draining of the intestine in all doubtful cases. As a consequence my mortality in this desperate type has been reduced at least 50%. Drainage of walled off collections of pus or extra-peritoneal cellulitis, or the insertion of foreign material into gangrenous or suspicious locations in order to render the part extra-peritoneal, must not be confused with the contamination of the peritoneum itself, which does not require drainage, for the very good reason that such drainage is impossible."

Let us turn for a moment and review briefly the pathology of peritonitis. The peritoneal cavity may be regarded as a great lymph sac, lined throughout with pavement epithelum. Its chief function in health is to secrete a serous fluid which allows the viscera to glide upon each other with the least possible friction. This fluid is constantly being secreted and reabsorbed through the lymphatics of which there is a bountiful supply and most poisons or extraneous matter are effectually taken care of by the lymph glands.

If this sac receives an overwhelming infection, as for instance a virulent streptococcus involvement, the toxins are rapidly absorbed, the protective lymphatic glands are overpowered and the patient receives a fatal dose of toxins; the exudate does not coagulate and block off the

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lymphatics. At autopsy such a peritoneum shows very little evidence of inflammation.

Treatment in these cases is of little avail. We may open the abdomen and attempt drainage, even massive gauze packs, but these only do good locally by producing an inflammatory reaction which blocks off a few lymphatics with which they come in contact. The whole peritoneal cavity can not be drained. Our chief hope lies in supportive treatment which will allow the system time to develop antibodies or antitoxins to combat the toxemia. Commercial antitoxins or chemical substances may be developed later which will stem the tide, but as yet we have nothing specific.

Now on the other hand, if the infection be of a milder type, say, by staphylococci, pneumococci, or colon bacilli, the peritoneum has time to react and throws out an exudate rich in fibrin, which coagulates and effectually seals off the lymphatics, thereby rendering the peritoneum a non-absorbing membrane. The patient may receive a small dose of toxins at the beginning of the infection, but later very little absorption takes place. This exudate not only closes up the lymph vessels but tends to wall off the infection and limit it to a portion of the peritoneal cavity.

Our early training and teaching has always laid stress on the peritoneum as being the avenue by which toxins entered the general circulation, but recent studies have proven that this theory is not correct. An inflamed peritoneum absorbs very few, if any, toxins.

We have failed to take into consideration the absorbing power of the twenty or more feet of the mucous membrane of the small intestine and colon. If we are to have a broad view of this condition we must always have in mind the intestinal mucous membrane. We must think beyond the peritoneum.

The normal intestinal mucous membrane will absorb very few toxic substances, but here we have a membrane, inflamed, stretched almost to the breaking point, whose cells being in various stages of degeneration are unable to check the absorption of poisonous materials.

It is generally conceded that even a slight peritonitis will produce an ileus; this will vary in degree with the virulency of the peritoneal envolvement. Monihan, after his vast experience, says "there is no appendicitis without obstruction." Dr. W. J. Kennedy, in a recent article, says, "Peritonitis per se would often win the fight, a physiological process, were it not for bowel obstruction."

What causes the obstruction? Probably the first dose of toxins absorbed paralyzes or weakens the musculature of the intestine, and also interferes with its nerve supply. On top of this is the involvement of a loop or loops of intestine in the abscess wall or cavity. Exudation and migration take place into the subserous and muscular walls of the gut, the segment becomes paralyzed and distended, and the obstruction takes place, partial or complete.

Now we have an ideal condition for the intestinal flora to multiply. Probably the poisons are produced in the upper part of the intestine by the bacterial action on proteids and their split products. A distended bowel and impaired nutrition renders the gut more pervious to toxins.

There is more or less evidence, though unconfirmed, that the toxemia in acute intestinal obstruction is due to the absorption of anaerobic toxins from the small intestine; the bacillus Welchii is the most constant of these organisms and may be the chief offender. The administration of antitoxins made from the bacillus Welchii has proved of distinct value in cases of paralytic ileus.

Besides the intense toxemia in these cases we have also to take into consideration dehydration. It is estimated that seven to ten quarts of water are secreted by the upper intestinal tract, in twenty-four hours, and if the patient is vomiting, this loss of water must be made good or a fatal termination will result.

There have been a great many experiments on dogs, to show the toxicity of the intestinal contents in cases of obstruction, but with rather unsatisfactory results as to the time required to produce a fatal toxemia.

Recently Van Buren[3] reported the results of experiments on five dogs with intestinal obstruction of two days' duration, and five dogs with obstruction of three days' duration, as follows:

The intestinal contents from every one of the ten obstructed dogs caused toxemia when injected intravenously into a presumably healthy dog. In one case the symptoms (vomiting, purging, and general depression) were slight. In five cases they were severe. In four cases death resulted in from 2 to 6 hours after the injection.

We feel justified, therefore, in assuming that at the end of 48 hours, even in simple obstruc-

tion, with little intestinal damage, there is usually poison in the obstructed intestine which is probably being absorbed and which ought to be removed.

Accordingly, we recommend that enterostomy be done as routine in mechanical ileus cases that have been obstructed for 48 hours, but we have insufficient data as yet to support such a recommendation.

Orr and Hayden,[4] in their experiments on dogs, show the following chemical changes in the blood in high intestinal obstruction:

A constant rise in the nonprotein nitrogen and urea nitrogen, a fall in the chlorides, a rise in the carbon dioxides combining power of the plasma. Following these observations, experimental jejunostomy was tried to observe its effects as compared with those of the administration of sodium chloride solution, and to determine its value in intestinal obstruction. The authors came to the following conclusions:

Jejunostomy does not prevent the chemical changes characteristic of obstruction, neither does it prolong life, but the administration of sodium chloride solution tends to prolong life regardless of jejunostomy.

It will be seen that these experiments on dogs do not agree with the mass of clinical evidence in favor of enterostomy.

In nearly all cases of ileus due to peritonitis, the upper jejunum will be found filled with fluid, which contains the toxic material. This is due to the fact that the intestinal current is reversed. The rest of the intestine is ballooned out with gas. I believe that it is this toxic fluid that is the chief factor in the fatal termination of these cases.

It is not the peritonitis that kills, but the peritonitis produces obstruction, and it is the toxins, inside, and not outside, the gut, that brings about the fatal termination.

As we all know, gangrenous appendicitis is the most common cause of peritonitis, and in order to avoid the complications of paralytic or mechanical obstruction, we should operate on these cases, as soon as a diagnosis is made, whether it be 24 or 48 hours after the first symptoms.

I know that this view will not meet the approval of all my colleagues, but let us for a moment consider the conditions as they exist in a case of ruptured appendix. The distended abdomen means just one thing—obstruction, partial or complete. The virulent germs are present in the mucous mebrane of the appendix, which must infect the mucous membrane of the bowel. Add to this the obstruction and the absorption of the toxins from the damaged mucous membrane, and you have every element for a fatal toxemia.

I do not believe that the inflamed peritoneum absorbs toxins to any great extent. It is true that the inflamed appendix situated in the right iliac fossa between the abdominal wall and the cecum may perforate the abscess, become walled off and the patient go on to recovery with a late operation. Unfortunately we can not tell where the appendix is located. If it is retrocecal and deposits its infection behind the cecum, in a region rich in absorbents, with none of the protective elements of the peritoneum, the patient often succumbs to a fatal toxemia, unless the appendix is removed early and the region drained.

A perforated appendix in the ileocecal fossa and in the pelvis soon is surrounded by one or more loops of intestines which come in contact with the purulent fluid; their peritoneal and muscular layers soon become infected and obstruction results.

"The only safe place for an inflamed appendix is in a little bottle on the mantle, and the sooner it is placed there, the better it will be for all concerned."

Another source of paralytic ileus, and to my mind one of the greatest in importance, although I make this statement with the greatest humility, knowing full well that the stand I take is not popular, is the habit of the majority of surgeons of giving their patients a hypodermic of morphine before the operation. Why? Because it makes the work of the anesthetist easier. Any anesthetist who with a few kind words and a friendly touch cannot win the confidence of the patient, and quiet his fears, should seek other work.

Does the morphine deaden the receptive centers of the brain, thereby lessening the danger of shock? I do not believe so to any appreciable extent.

Yates and Rain,[5] in a recent article, state that opiates produce a slight alkalosis, and so counteract in part the acidosis caused by the anesthetics, and recommend pantopon as the drug of choice.

According to Hare, opium depresses the motor activity of the intestines, by stimulating the splanchnic inhibitory fibers, thereby preventing peristalsis. This is the first stage of obstruction.

How silly it seems when viewed from this angle to give a drug which inhibits peristalsis when we are fighting as hard as we can to cause the bowels to move.

I know that in my experience, abdominal cases do better without morphine, either before or after operation. I have had many less distended abdomens since discontinuing or limiting the use of the drug.

Rough handling of the abdominal contents at the time of the operation is also a very fertile cause of obstruction.

From what has been said, it will be seen that probably the most prolific source of poisoning is in the upper part of the small intestine. Our chief aim should be to drain this area, and as it has been shown that the toxins develop in dangerous quantities within 48 hours, we should drain early.

The incision, under local anesthesia, should be made through the outer border of the left rectus muscle, the peritoneum opened, the finger inserted into the abdomen, the ligament of Treitz located, then the finger follows the upper jejunum down for about twelve inches, and this portion of the gut, which is filled with fluid, is brought up through the wound. The assistant milks the fluid out of the loop, and holds it, while one or two large-sized catheters are passed into the lumen of the gut and are fastened, using a modified Witzel method. The ends of the catheters are passed through a hole in the omentum and gentle traction made upon them while the wound is being closed.

This procedure is generally followed by an escape of fluid matter and gas, and a great reduction in the size of the abdomen.

If at the time of operating on a gangrenous appendix, we find the bowels distended (a partial obstruction), it would be good technic to reach the hand upward in the abdomen, grasp the highest portion of water-logged jejunum, bring it into the wound, insert a catheter, then passing a forceps through a stab wound in the left rectus, grasp the end of the tube and pull it upward through the wound. As yet I have never used this method, at the time of operation, but I believe in it thoroughly.

By performing a jejunostomy we have drained the intestines, and have established an avenue of escape for the toxins, but our work is only half finished; the next 24 to 48 hours will tax the strength and resources of the best men.

After the operation, sodium chloride solution should be administered either intravenously or by hypodermoclysis, to replenish the loss of the fluids, and to make up the loss of sodium chloride of the blood.

At the Mayo clinic the following formula is used for intravenous injection:

Sodium Chloride, Gms. 10.

Glucose.....Gms. 100 to a litre of water.

Orr and Hayden attempt to administer 1 gm. sodium chloride per kilogram of the body weight, every 24 hours. Normal saline or hypertonic solution may be injected directly into the jejunum through the tube.

Vomiting is often a distressing symptom, but may aid in relieving the toxemia. Colonic irrigation of alum water may help to relieve the obstructed bowel.

Time forbids my going into detail as to the postoperative treatment, but I wish to mention a few drugs which seem to help:

Eserin at times is an important drug but should be used with caution. Rupture of the gut may occur, and in some cases a reversed peristalsis is set up which keeps the patient vomiting. Pituitrin is a very useful drug, in some cases. Strychnine Gr. 1/30 every four hours is used in all my cases. Morphine should be used, if at all, as if it cost as much as radium.

In closing, I simply wish to mention the use of spinal anesthesia in the treatment of these cases. While the treatment is a new one, a number of observers have reported very good results, probably due to paralyzing the splanchnic inhibitory fibers to the intestines.

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DISCUSSION

Dr. David R. Kennedy, Sarasota:

I think the subject of peritonitis is one of the most interesting in its development in the last few years. The usual routine when I was an interne in the hospital six years ago was to give them morphine, put them in the Fowler position, give salt solution and glucose by rectum, and let them die on the third day after operation. You

could nearly always count on when you would have their room, if you were crowded for space. At that time I would have been run out of the hospital before my service was completed if I had used the treatment I use now. I got tired seeing them die; being in a small town, with patients and family looking to me, I adopted more radical measures. I think there are three things very important in these cases.

One, and I think the most important, is to keep the patient full of fluids. Every abdominal case I operate on I give 750 cc. of glucose and saline solution in the vein before they awake from the anesthetic; if it is a local, right after the operation. That night, if done in the morning, I give them the same amount in the vein; next morning the same amount in the vein. By keeping up fluid you will prevent a great deal of toxemia which leads to this paralytic obstruction.

The other important thing, don't wait too long to get the bowels started moving; give colonic irrigation next day after operation and a purgative on second day after operation.

The other important thing: if they continue vomiting more than 24 hours and have abdominal distension or pain, no matter how much gas and fecal matter you get from your colonic irrigation, do a jejunostomy, putting one tube in distally, one proximally; give concentrated solution of Epsom salts in that tube, by mouth and by rectum. What I do is take a glass full of Epsom salts crystals, dissolve in 12 ounces of hot water, tell the nurse to keep on using that from a pound and a half of Epsom salts until the salts give out or the patient's bowels move. Like Dr. Morton says, peritonitis is not the thing that kills. Fowler position doesn't mean a thing in my estimation; after this thing has spread it doesn't matter what position they are in. Get the bowels to move and let the drainage be out through the bowels instead of absorbed into the blood stream and liver, where Dr. George Crile says all this toxemia occurs.

Dr. Kenneth Phillips, Miami:

I would like to emphasize two points: First, regarding sodium bicarbonate injected into the bowel. Three things accompany these cases, rise in nonprotein nitrogen; a fall in chlorides and alkalosis. The alkalosis is not without importance for consideration. I don't believe I would favor an alkaline injection on top of an already existing alkalosis. The acidosis resulting from the general anesthesia will probably be beneficial rather than detrimental. Secondly, I don't believe we ought to get too radical with enterostomy. There are a lot of cases where the Rehfuss tube, especially if one is successful in getting it into the duodenum, will often serve for drainage. I have seen it reduce distention, vomiting is invariably controlled and with the injection of lactose peristalsis start up and the abdomen go flat. Enterostomy, in my mind, is rather a last resort, but I want to stress one point already made, and that is, when these cases are late at the time they reach the surgeon, I do think preoperative treatment is important, and to take them in and operate immediately upon admission is almost sure to be fatal. With medical management and a little treatment, I feel quite certain your patient will be rendered in much better condition for major surgery.

Dr. C. F. Fleming, Bradenton:

I am interested in this subject matter. I want to mention three points. The picture of intestinal obstruction to my mind has been cleared to a considerable degree by some man, I can't recall his name, who describes the picture in three stages. In the first place, as far as diagnosis is concerned, the first is the stage of shock, like the crushing of a limb, with all the symptoms; the next stage is the stage of peristalsis, in which you get the bowel trying to overcome the obstruction; the third is the stage of toxemia. To my mind that simple classification of the symptoms of intestinal obstruction makes it a whole lot easier to identify your case of obstruction, which to most everybody is one of the bugbears of surgery.

I have been interested in what Dr. Phillips has been talking about in regard to the chemistry of intestinal obstruction. I have in mind one case in which I thought the patient was going to die where I introduced sodium chloride, not in the strength he suggested, but in the strength of either 20 or 30 per cent, introducing an ounce of the sodium chloride of that strength. That was following somebody's suggestion. That patient passed from apparently a hopeless stage into a stage in which it was possible to operate and relieve the obstruction and the patient recovered. I can't help but feel the sodium chloride introduced had something to do with the recovery.

There is just one more thing. Deaver makes the point, which to my mind is important, that these cases of intestinal obstruction can be divided into early and late cases, the early cases divided into the real early and the late early cases. Those cases of obstruction which occur within three or four days of operation are usually at the site of the operation; those cases which occur from ten to eleven to fourteen days following operation are very frequently at a point distant to the site of operation.

Dr. Herman Watson (closing):

We have here a deadly malady, if neglected, but one in which the treatment is reasonably satisfactory if instituted early.

Most of us have had patients sent in who have been suffering from acute obstruction for several hours, and who have been assured that an operation would relieve them, that it is a very simple thing and will restore them to health. As many of these cases do not appear desperately ill, their friends, and sometimes their physician, can not understand why they do not get well after operation. They are then, in many cases, at the breaking point and regardless of what is done for them, death rapidly intervenes.

I think Finney says he has a mortality of something like 5% even in cases operated on within the first six hours, and the mortality increases rapidly from hour to hour. The outcome depends upon early operation, and we want cases to come to operation in time for treatment to benefit them.

Dr. A. O. Morton (closing):

There are just one or two points I want to stress in closing the discussion. I expected to get a lot of criticism on my opposition to the use of morphine in these cases. I hoped for a general discussion on this phase of the subject. I wish that we would try getting along without morphine in some of these cases in which we used the drug. I think you will be more than pleased with the results. The other point which I wish to stress is that of early high jejunostomy. The operation is simple. If you do it in some cases where it is not absolutely necessary you have done no harm, it takes but a few minutes to do it, and you have got an anchor that may save you worlds of trouble during the convalescence of the patient.

ARTIFICIAL FEEDING OF INFANTS UNDER ONE YEAR OF AGE*

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Introduction.—There is no question in our age but that nature has provided every young animal with the best possible food in the milk of its mother. This is particularly true of the human species as shown by a comparison of the mortality rate between breast-fed and artificially fed babies, the rate being four times higher in the latter than the former. However, there are times when infants are deprived of all or part of this food, either by death of mother or other causes with which we are all familiar, and it becomes necessary that some substitute for mother's milk be made.

Mixed Feeding. — It is necessary to supply only part of the food for a child in cases where the mother has some milk. This is called "mixed feeding," and should be used in every instance possible as only a few ounces of mother's milk may often save a baby's life, especially when they are bad feeders. Physicians should use every means possible to stimulate the milk of mothers before coming to conclusion that there is no milk present. Mixed feeding is most often necessary during the first weeks of life while the mother's milk is insufficient and oftentimes not due to ill health of mother but to the slow reaction on part of glands of breast to stimulation. Thus, no one should decide there is no milk in breast of mother (especially a healthy one) but should persist by letting child suck and stimulate, or by using such artificial means as Abt's breast pump. Two or three feedings a day from bottle will tide a baby over this period of lack of proper secretion of breast, or, if necessary, they can be kept up and baby will thrive as these supplementary feedings are added.

Substitutions for Mother's Milk.—All leading pediatricians of the world today agree that cow's milk is our main reliance in artificial feeding of infants as well as one of the best foods for all young children. Goat's milk is used in many countries and in many sections of the United States and has the same composition and possesses some advantages over cow's milk. Goats are cleaner and healthier animals than cows and do not have tuberculosis, but the scarcity of the milk prevents its wide use in this country.

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Mare's milk which has composition and digestibility nearest to human milk is very good, but its scarcity also makes it impracticable to use.

With the decision of the best food to be used in artificial feeding being in favor of cow's milk, we would think that it would be universally used, but the exact opposite is true and more babies are fed on patent foods than all other foods combined. There are two distinct classes of patent foods—complete and incomplete. The incomplete should never be used except in connection with cow's milk. These foods are highly advertised as the greatest foods on earth for babies and often babies do fatten on them, as they do on other patent foods that contain a high per cent of carbohydrates, but the flesh taken on is not true flesh and often the infants will show signs of rickets and all have poor resistance to disease. Scurvy often follows the exclusive use of incomplete patent foods.

Complete patent foods have been used with success in artificial feeding. However they have all been treated to high degree of temperature, and Vitamin C has been destroyed. Dried milks and some condensed milks are found in this class. Klim is one of the best known dried milks and it takes three level tablespoonfuls of this milk added to eight oz. of water to make 8 oz. equal to composition of fresh cow's milk. Borden's condensed milk is one of the best known complete patent foods put up in liquid form and is prepared by evaporation from fresh cow's milk. Recolac, put out by the Mead Johnson & Company, and being a constructed human milk is being used extensively as artificial food and seems to fill all the requirements of a well-balanced milk.

Patent foods possess some advantages over cow's milk; they are: (1) cleanliness, (2) keep well, (3) require no ice. They should not be used, however, except in cases where cow's milk cannot be gotten or where it is of questionable source.

Requirements of Cow's Milk.—Since we are agreed that cow's milk meets the requirements best as regards composition, digestibility and supply, we should see that the following essentials are possessed by the milk we use: (1) freshness, (2) health and personal hygiene of handlers, (3) healthy, tuberculous-free herd, (4) should not be skimmed and no preservatives used, (5) number of organisms should be the minimum.

Herd milk has been found to be the most desirable as it is subject to less variation from month to month than milk from one cow. Milk from pasture-fed cows has been found to possess some advantages also. Butter fat should not be too high but of average per cent.

The composition of cow's milk as compared to human milk is approximately as follows (at least it is close enough for our purpose):

	P	F	S
Human milk	1½	4	7
Cow's milk.....	4	4	4

Methods of Preparation.—There are many points to learn and keep in mind in feeding a baby and they might be stated as follows: (1) We are feeding a baby, not a test tube. We should not use too much theory but use science plus common sense. (2) Begin with weak formula and slowly increase strength until baby thrives. "Begin Low and go Slow" is a good motto in infant feeding. Begin with approximately 1 oz. of straight cow's milk per pound body weight in babies over 3 months of age. Some pediatricians begin with larger amounts with good results. (3) Increase formula according to hunger of baby, character of stool, gain or loss of weight and general appearance. (4) Cover protein and fat requirements by using cow's milk fattened with sugar. (5) Have formula in a general way check o. k. as regards fats, protein, carbohydrates, salts and vitamins. (6) Use milk raised to boiling point. (7) Give 2 more oz. than child is month of age in formula. (8) Feed as follows: 1st to 3rd month, seven feedings at three-hour intervals. Third to sixth month, 6 feedings at 4-hour intervals. After six months usually five feedings are sufficient. May have to continue six. From the above rules we will proceed to feed baby weaned at five months of age, weight 14 pounds, as follows: Make up total amount for 24 hours at one time. He receives six feedings of seven ounces each—equal 42 oz. Whole milk, 14 oz. Water, 28 oz., no sugar. Boil for 3 minutes, stirring constantly so that there will be no scum, add enough boiled water to make up 42 oz. when finished. Divide into six feedings of seven oz. each, warm before each feeding except in very warm weather when cool milk is very refreshing to infants.

If child takes this well the first day, start a small amount of sugar the second day, also begin adding 1 oz. more of milk and decreasing the

amount of water 1 oz. for a few days. The sugar should be added to formula after boiling and cooling but before it is divided into feedings.

Proteins will give us least trouble of all in this formula as it has been made more digestible by boiling, but we should watch fat and sugar.

The stools in artificially fed babies are different from those in breast-fed infants, being fewer in number, firmer in consistency and varying in color. Too much stress should not be placed on the stools but look for white stools which means fat is not being digested, also watch for loose stools and chaffing of buttocks which means too much sugar. The kind of sugar used possesses no great advantages. All sugars taken into the body are changed to glucose before being absorbed. However, glucose cannot be used successfully except in acid milk. Milk sugar is used by some but is more costly than cane sugar, over which it possesses no known advantage, and is more likely to adulteration. Malt sugar helps in constipation due to fat indigestion.

Each baby is a rule unto himself as to how much and in what concentration he can use milk and its different constituents. But we feel safe if the following goals have been reached:

0-3 mo. of age ..... ½ strength
3-6 mo. of age ..... 2/3 strength
6-8 mo. of age ..... ¾ strength
8 mo. of age .....Full strength
For summer use..... ¾ strength

Starting Newborn or Premature Baby.—So far we have said nothing of feeding newborn or premature infants. If the child weighs under 5 lbs., some human must be gotten for two or three feedings a day or baby will in most instances die. Some mother, even though she does not live next door, can express some milk into bottle and send to infant. In some of the larger cities of this country many women make their living in their own home by sending a few ounces of their own milk to start premature infants. In feeding newborn babes, of course same principles apply as stated but baby's stomach is much more delicate and stomach will need more training, thus we must start on very weak formula, using skimmed milk which if tolerated is made stronger by adding cream. Fats give most trouble in these cases and infant should be watched closely for sour vomit, which is nothing more than fat vomit, also watch color of stools.

Start newborn baby:

Skim milk, 5 oz., increase ½ oz. until 10 oz.

Water, 15 oz., decrease ½ oz. until 10 oz.

Start and feed 2 oz. every 2 hours. When baby has been trained to take the above and with the addition of cream, sugar should then be tried in small quantities.

Other Necessary Articles of Diet. — Cow's milk contains all the mineral salts necessary to building up of body. Many of these substances are in great abundance, there being three times more than is assimilated; thus it is not necessary to give lime water as was once done to furnish this substance. However, it is good to use in case of vomiting.

Water should be offered every child several times a day between feedings. This is especially imperative in the summer months.

Regardless of what baby has been fed on, orange juice (preferred) or cabbage pot licker, strained tomato juice (cooked) or fresh grape juice, all diluted, should be given in small quantities, teaspoonful at age of three months and gradually increased in amount and concentration.

Addition of Foods Other Than Milk.—Infants that have progressed nicely can be started on outside feeding at six months, some earlier. The following can be added at months stated, with no trouble, but each article added should be an experiment and if it does not agree with child should be withdrawn. Remember when baby is started on new diet he may lose appetite and be sure not to give him calomel or other drug, thinking he has had an intestine upset.

At 6 months, one artificial feeding, zwieback.

At 7 months, cream of wheat, oat meal or other well-cooked cereal. Campbell's tomato soup.

At 8 months, vegetable mash, ¼ coddled egg.
1 oz. scrapped beef and worked up.

At 9 months, baked apple, soft boiled egg.
Well cooked mashed vegetables.

At 10 months, prune pulp, bacon strip (crisp).

At 12 months, 3 meals per day as follows:

Breakfast, orange, cream of wheat, cracker, glass milk.

Dinner, strip bacon (crisp), tomato soup, crackers, vegetable mash, baked apple, potato, milk.

Supper, milk, cracker, toast, soft boiled egg, baked apple, or prune pulp.

There are five classes of food, one of which from 9 mo. to one year on should be included in some meal during day.

1. Milk (clean), skim if too rich.
2. Cereal (only cooked).
3. Cooked vegetables (starchy and green).
4. Fruits (cooked apples and oranges are best).
5. Bread.

DISCUSSION

Dr. J. D. Love, Jacksonville:

Mr. Chairman, it has been well said that babies must be fed with brains rather than any one milk for food. Babies cannot be fed by rule of thumb. If this were so, pediatrists, as specialists, would have a limited field of activity. All babies require to be fed as individuals and not as a class.

Pediatricians are never so wed to any one food as to deny the virtues that exist in others, and most of the foods that are used at the present time can be made acceptable with certain additions or alterations.

The essayist has mentioned certain requirements; he has mentioned certain essentials, and if I may be allowed to do so I shall point out four things which I consider to be essential to a perfect food. I am borrowing from Dr. Marriott when I do this.

1. It must have a sufficient number of calories.
2. It must be easily digested, because it makes no difference how many calories the food may have if it is not easily digested the baby either suffers from malnutrition, lack of assimilation or some serious disturbance of the alimentary canal.
3. The third essential is that the food must contain all the food elements, the fats, carbohydrates, proteins, water, salts and vitamins. Unless it contains all these elements it is not a properly balanced food.
4. The fourth essential is that it must be reasonably free from all bacteria of a harmful nature.

If all these essentials are fulfilled the food is a perfect one for the baby, and it makes no difference whether it comes from a can or a bottle, whether it is fresh or boiled, whether it is lactic acid milk or milk diluted with lemon juice, it makes no difference what name you place on it; it is a perfect food.

Dr. Wm. Edson Ross, Jacksonville:

I think that we all agree on the subject that when we cannot get breast milk cow's milk is the best that can be used; (no question about that.) The doctor stated some of his ideas about quantities of milk. He said he feeds one ounce of cow's milk per pound weight of infant in a day of twenty-four hours. I do not see how he gets away with it. I think the majority of babies ought to have at least one and one-half or two ounces to give them the needed calories and that should be given with sufficient water to make up their total daily quantity of intake. I am very fond of the lactic acid system of feeding. I use nothing but cow's milk; I do not use artificial foods, and lactic acid feeding has been the easiest solution of feeding babies of anything I have found in my practice.

Personally I do not follow exactly the principles of Marriott who worked up the lactic acid theory. That gives us a food of buttermilk consistency. At first I started using the full quantity of lactic acid, but I have gradually worked that down until I feed my babies on the same formulas of protein fats and carbohydrates that I always did. I now use about one-eighth as much lactic acid as formerly. It is theoretically best to give full buttered milk, but in this way you get exactly the same results from lactic acid milk. This avoids a great deal of the trouble we have in getting an infant to take a thick buttermilk properly prepared.

Technically I am wrong; it should be brought up to where Marriott brought it, but in practice lactic acid milk or buttermilk as it is given is very hard for the mother to make and if you can gradually work down and dilute the acid before you add it to the milk you will not have a quantity of curds; you will have absolutely no curds in this whatsoever.

I had a very interesting case a few months ago. It was a premature baby that weighed two pounds and seven ounces. This baby was put on skimmed milk and water, equal parts, from birth; it took one drachm every hour; its weight went down only to two pounds and five ounces. As far as I have been able to find that is about the record of a baby still living; (and it is still living and weighs four pounds and five ounces.) We then added two parts of skimmed milk and one of water and small quantities of Karo with the small quantity of lactic acid to it. Lactic acid feeding is the simplest I have used and I think you can get just as good results with much less quantity of the acid, and get the same lactic acid stools if the milk is very cold when the acid is added to it.

Dr. Luther Holloway, Jacksonville:

With regard to the numerous brands of artificial foods on the market which the manufacturers recommend very highly, I want to throw out a word of caution. Drs. Dick and Dick of scarlet fever fame have grown cultures of pathogenic organisms from nearly all of the dried preparations of milk. We all know of the high mortality rate of premature infants. With these little fellows, where there is an absence of mother's milk, we have been successful with the use of fat-free milk, with the lactic acid modifications as a starter. Nearly all of these babies have a lowered tolerance for food, especially the element fat. Their ability to handle food is very much lessened and so in feeding these babies bear in mind that very small amounts of a weak mixture is best to feed at first with a gradual increase of strength of the food as the individual baby can tolerate same.

ROENTGEN DIAGNOSIS OF PULMONARY TUBERCULOSIS*

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Jacksonville.

The roentgen examination of the chest can be of the greatest assistance when properly and carefully done. The fluoroscope alone should never be relied upon to prove the absence of lung pathology. The eye, with the most acute vision, may not note minute changes in the lungs that the sensitive film will clearly record. Frequently the pathology present is symmetrical in its distribution so that the illuminated lung as seen with the fluoroscope is evenly lighted. The variations in illumination are what the eye records and is what one expects when pathology is present. Later, when one sees the films in such a case, one is surprised indeed. If the fluoroscope alone was depended upon in such a case, an error of diagnosis and treatment would result.

Flat films may be of value where stereoscopic films are also made; but flat films alone should not be depended upon for accurate diagnosis. It requires for careful work the perspective which one secures in stereoscopic films to clearly visualize the faint changes from the normal that are present in early cases of tuberculosis. Stereoscopic films made in the anteroposterior axis and posteroanterior axis are necessary to clearly see all the lung area. These are augmented by the information obtained with the fluoroscope. Flat films, made in special angles, may be of additional value and help. Stereoscopic film examination, plus that of the fluoroscope, represents a complete roentgen examination of the chest.

Lung pathology manifests itself as an increase of density on the film and to be of real diagnostic value should lie in the area known as the cortical lung. Changes about the hilus or root shadows are more likely variations of the normal, rather than actual pathology. If they are coincident with cortical pathology, then they are significant. The pathology of pulmonary tuberculosis is most often situated in the apical lung, or in the upper lobes. It, however, frequently begins in the middle third of either lung. It does occur, and may be limited to the base of the lung. Basal tuberculosis is more frequent than thought to be and is easily mistaken for some other lung condition as it has no typical appearance. Cavities of the lung when noted are most likely tuberculous, but they are found in other diseases. We must especially keep before us lung abscess. Lung abscess following the removal of the tonsils occur too frequently. Its first symptom is, at times, a hemorrhage. Cough and fever may be present previously but not considered seriously.

Film study of the chest gives a record of the pathology present. It indicates its location, its extent and quantity. Periodic examinations then are of great value as they record the change in the lung, whether they be of repair or increase of the disease and assist the diagnosis and prognosis.

Stereoscopic film study of the lungs, plus the findings of the fluoroscope, gives information that checks up well with the findings of the internist.

The amount and extent of lung pathology, when seen on the X-ray films in a supposedly early case of tuberculosis, is much more than would be expected. The amount of pathology seen on the films is always greater than the physical signs would lead one to expect. An acute case of tuberculosis is quite often found to be one arising about an old tuberculous process. Often an old, inactive cavity is present, or old scars of a previous tuberculous infection about which the acute disease has started.

The type of pathology or evidence seen on the X-ray film is most often acute mottling, or small areas of acute consolidation surrounding old lesions. It is quite common to find an old cavity that had not been noted by physical methods of examination. This is often centrally located or

*Read before the Ware County Medical Society at Waycross, Ga., Oct. 31, 1928.

surrounded by dense scar tissue so that it gives no physical signs. The so-called acute miliary type of tuberculosis of the lungs gives an appearance of fine flakes of snow about the usual lung markings, but is of infrequent occurrence. This type shows a marked decrease in the extent of pathology with rest and appropriate care. Often almost an entire lung will return to a normal appearance in a few weeks. The process will gradually localize at some point, most often in the upper lobe.

We cannot absolutely state whether the lesions present represent an acute process, or chronic, but we can go a long way towards doing so.

I wish to stress the importance of the regular, periodic study of chest cases. It charts and records the changes that have occurred.

The acute cases, when they improve, will show a marked reduction in the amount and extent of lung pathology in a few weeks. In other types, the changes will not be so rapid but will be definite. We then have a valuable check on the changes in the physical signs and the clinical evidence of improvement. Also, if the disease is progressing unfavorably it will indicate such a change.

The question is often asked—"will the X-ray always show tuberculosis of the lung?" In answering, I would say that in a carefully conducted X-ray examination of the chest the chance of failure is very minute.

We have to consider many other types of chest pathology as follows: Lung abscess, certain types of malignancy of the lungs, syphilis of the lung, dust inhalation of different types with their chronic changes, blastomycosis, streptothrix infections, pleural lesions, rib pathology.

Finally, the diagnosis is, of course, the sum of all evidence, including the physical examination, the history, the sputum study, X-ray examination and any other information that can be secured. We must not depend upon the X-ray alone but combine it with other careful work.

PELLAGRA WITH PSYCHOSES*

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Chattahoochee.

In 1735, almost 200 years ago, Gaspar Casal of Spain made observations on pellagra and in 1762 published the first scientific description of the disease. In this description the disease is called "mal de la rosa" from the characteristic erythema, and is referred to as "a peculiar kind of disease consisting of a combination of scurvy and leprosy." A similar condition was observed in Italy in 1755 and described under the name of Alpine Scurvy in 1776. In 1771, F. Frapalli, of Milan, published a description of a similar condition to which he gave the name pellagra. Mal de la rosa, Alpine scurvy, and pellagra were later shown to be identical conditions.

How long pellagra had existed in this country before it was generally recognized as such is not known; however, the recognition of pellagra in the United States is comparatively recent. Sporadic cases were reported from New York and Massachusetts as early as 1864, but the disease was not generally recognized until 1907-1908, following a report by Searcy of Alabama of an outbreak in an asylum for negroes in that state. Following this publication the disease began to be reported from practically every section of the South and from several Northern localities. The experiences of many of the older practitioners, and clinical records of institutions for the insane, and the histories of many of the earlier recognized cases would indicate very strongly the disease was present in many localities and institutions for years prior to its general recognition.

Definition—Pellagra is a chronic disease endemic in certain sections, and occasionally appearing in epidemic form. It is usually characterized by cutaneous, gastrointestinal and nervous symptoms. Mental sequalæ may occur. It is now generally regarded as a deficiency disease.

Etiology—Pellagra is essentially a disease of the poorer classes, but it sometimes occurs among the well-to-do; it no doubt occurs at times in cases where reduction in weight is carried out by dieting, if the case is not properly supervised.

A great diversity of theories has at one time or another been brought forward by various observers to explain its cause. The literature relating to its etiology mentions as factors practically every disease-producing agency conceivable, but with one exception these various theories have supplanted each other in more or less regular order, and at the present time are wholly lacking in confirmation.

The one belief that has continued to survive is that there is a relation between the disease and the dietary of the patient. The belief is as old

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as the knowledge of the disease itself, for Casal recognized the efficacy of nutritious food in the treatment of "mal de la rosa," and Roussel, a French investigator, summed up the information on this point as follows: "Without dietetic measures all remedies fail" . . . "When drugs and good food are simultaneously employed it is to the latter that belongs the curative action; the former exercises simply an adjuvant action and is without proved efficacy, except against secondary changes or accidental complications."

Since the fruitful and convincing investigation of Goldberger and his associates pellagra can safely be regarded as a disease due to faulty or unbalanced diet (of a specific type), probably to be classed in the group of deficiency diseases, typified by scurvy and beri-beri; though the specific pellagra-producing dietary fault or faults have not yet been determined.

For a number of years it has been thought by many that the number of cases of pellagra were decreasing in the Southern states, but today when State Boards of Health become so alarmed as to request the co-operation of the County Medical Societies, the public press, and Medical Journals in an attack on pellagra, which has recently rapidly increased, we find that such is not the case.

That the disease is on the increase in Florida is indicated by the increasing number of cases committed to the Florida State Hospital during the past few years; these are usually cases with psychoses. The proportion of all cases of pellagra showing such mental involvement has been variously estimated at from 2 to 10%. (Nelson Loose Leaf Medicine).

In 1926 the total number committed was 13, six of which were white females, six colored females and one white male. In 1927 the total number was 34, an increase of 21, over 1926; 20 were white females, three white males, 10 colored females, and one colored male. January to October, 1928, 53 were committed, an increase of 19 over 1927 for the nine months. Of this number there were 15 white females, 18 white males, 16 colored females and 4 colored males. Of the total number of cases 73 were females and 27 males; 38 negroes and 62 whites. Total, 100. The ages range from 25 to 77 years, the majority being more than 45 years of age.

Counties—Of the 65 counties of Florida patients were committed from 33; these counties being fairly evenly distributed throughout the State, showing that the disease is not necessarily more prevalent in any particular part of the State. The commitments range from 1 to 12 to each county, the largest number coming from Duval, Orange, Dade, Leon, DeSoto, Gadsden and Hillsborough Counties.

It is well known that a case of pellagra is usually well advanced before mental symptoms appear, although nervous symptoms appear early. Occasionally a case is seen in which mental symptoms appear early in the disease and rarely a patient may be mentally deranged months before the appearance of the pellagra signs. A distinction should be drawn here between pellagra with psychoses and psychoses with pellagra. Psychotic patients frequently develop pellagra because they will not take food in sufficient quantity if at all, and require constant supervision in this regard.

The psychoses of pellagra may simulate any type of mental disease; there is only one feature which can be regarded as distinctive and that is the depressive character. The condition may vary from mild melancholia to mania. In many cases the victim is violently delirious and has to be forcibly restrained; in others the condition is one of profound stupor. There are frequently delusions of persecution, confusion and disorientation in all planes, with impairment of insight and judgment. Hallucinosis may be present.

A pellagra patient with a psychosis usually presents a typical picture and frequently in addition to the three D's often mentioned in textbooks and signifying dermatitis, diarrhea, and dementia, the fourth D, representing death, is not far removed. The picture is often one of extreme weakness, emaciation and dehydration, well advanced skin lesions; stomatitis, with either diarrhea or constipation; mentally confused and not coöperative. Again in less advanced cases the patient is able to give a fairly good history of the onset and development of the disease and frequently gives as the first mental symptom "forgetfulness." The history is the same as in any case of pellagra, digestive symptoms arising first and in the order of their usual occurrence are, a mild indigestion, anorexia, altered taste, a sensation of burning or scalding of the mouth and tongue. As the condition progresses there may be pain and discomfort in the stomach and abdomen, which may become so severe as to suggest an acute abdominal condition. A loss in weight, though often

slight, may become apparent. In the early stages constipation or constipation alternating with diarrhea, is of frequent occurrence, though in many instances there is no history of involvement of the bowels until the condition has become well established. Occasionally the patient states that every spring there has recurred at exactly the same time of the year a period of diarrhea which may or may not have been attended with a sore mouth or tongue and without any sign of skin lesion, pellagra sine pellagra. We have found the persistent and troublesome diarrhea a comparatively late manifestation and frequently occurs as a terminal symptom.

The mouth symptoms of pellagra may precede, accompany or follow the skin manifestations. The tongue is usually intensely red, especially at the tip and along the edges; the mouth often becomes very foul and ulceration may occur especially about the gums and frenum of the tongue. These ulcers are extremely painful and this added to the extension of the inflammation to the oesophagus and throughout the mouth cavity, makes swallowing an agony. There is usually an extreme degree of salivation.

The nervous symptoms appear early. Several weeks or months before the appearance of other symptoms there is a complaint of progressive weakness and loss of energy—"rundown condition"—coming or growing worse during the late winter or spring months. Insomnia, vertigo, tingling, numbness, formication and burning of various skin areas, most commonly the soles of the feet, the hands and forearms, at times so severe that the parts are wrapped in cold cloths or immersed in cold water by patient. There are often symptoms of neurasthenic character, such as weight or pressure in the stomach, a lump in the throat, change in disposition, and general uneasiness. The prickling, burning sensation is a persistent symptom and often psychotic patients insist they are being persecuted by being stuck with needles in their hands and feet; others believe they are being shocked by electricity.

The cutaneous involvement presents the most distinctive single sign of pellagra in a bilateral, symmetrical erythema of the skin of certain parts of the body. The erythema is followed by a more or less pigmentation and thickening of the skin, with a sharply defined line of demarcation. In the majority of cases the erythema begins to fade in a week or ten days from the date of appearance; the skin becomes dry and rough and begins to desquamate in small scales, finally leaving a smooth white or pinkish surface. Just within the line of demarcation between the normal and affected skin there persists, long after healing is complete, a deeply pigmented line described by Merk and known as Merk's hyperkeratotic border. This line is of great diagnostic value because of its persistence long after the disappearance of any other skin abnormality. The above is commonly known as the dry type of eruption.

In a smaller number of cases, bullæ or blebs of varying size make their appearance in the erythematous areas. This is frequently referred to as the wet form of the eruption. These lesions often become secondarily infected with pus organisms.

The eruption may occur on any portion of the body surface, though it is most frequently seen on the backs of the hands and the forearms, dorsal surfaces of the feet, and the lower portion of the legs, the face, neck and upper sternal region. Though bilaterally symmetrical, it frequently appears on one side of the body several days or weeks in advance of its appearance on the opposite side. The greater number of lesions are confined to the uncovered surfaces and the eruption often appears rapidly after exposure to the sun's rays and is frequently diagnosed as sunburn. However, in bedridden hospital cases the lesions may appear on any part of the skin surface though the parts are always covered.

In some cases another skin symptom is found on running the tips of the fingers over the sides and point of the nose—there is a fine, rough, potato-grater feel. J. E. Paullin states that this symptom is very characteristic and may occur when no skin lesions are present. We have found this condition in a number of cases at the Florida State Hospital.

There is usually no fever in pellagra except in the wet type where a moderate rise may occur, and, in cachetic and mental cases, when a considerable rise in temperature *often* occurs. The pulse rise is usually in keeping with the fever. The blood picture varies from that of a slight to a marked degree of anemia. Gastric analysis shows a decrease in the acidity of the gastric contents and in advanced cases a total absence of free HCL. The urinary findings show nothing of importance.

Diagnosis — A well-developed case with the classical eruption should be readily diagnosed.

The diagnosis in the indefinite pre-eruptive stages is often difficult, but it is here that the diagnosis is most important. When complaints of a "weak and run down" condition, blind staggers, heartburn, peculiar taste, burning in the mouth, and frequent discomfort in the stomach are complained of, it should excite suspicion, especially if these complaints tend to occur or become worse in the spring of the year. When to these complaints are added general nervousness, burning and pain in the feet and stomach and soreness of the mouth and tongue, at least a tentative diagnosis of pellagra should be considered and treatment instituted.

Prognosis — The prognosis depends on how far the disease is advanced, the age, and the ability of the patient to take the required amount of food rich in vitamins. Many cases with psychosis are senile and bedridden and often a terminal pneumonia takes them out. Others are feeble-minded, syphilitics or chronic alcoholics, in which cases the prognosis should be guarded.

The length of time elapsing before the mental condition begins to improve also varies, and it has been noted that alcoholics improve slowly. In an uncomplicated case when the patient is able to take food properly the mental condition may be clear in from one to six months, the average being about two months. Mental symptoms may remain for weeks or months after all other symptoms have disappeared; neuritis may also exist for a long time. Many of the patients of this series were infected with hookworm.

TREATMENT.

1. A well-balanced diet administered in sufficient quantities in the proper manner, depending on the condition of the patient.

2. Abundance of fluids by mouth and if necessary by rectum or subcutaneously.

3. Sedation and stimulation if necessary.

4. A mild cleansing mouth wash frequently.

5. Usual measures for diarrhea; it improves and disappears with proper diet. Dilute HCL if gastric contents show a deficiency. Castor oil is also sometimes a valuable aid in diarrhea.

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BELFIELD'S OPERATION*

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West Palm Beach.

There is no doubt that before Dr. William T. Belfield, of Chicago, devised his method of attacking diseased seminal vesicles by vaso-puncture, and direct injection of medicinal solutions through them into the seminal vesicles, that many cases of chronic seminal vesiculitis were incurable, which today would be amenable to treatment.

It is not contended that this method of treatment is indicated in all cases of seminal vesiculitis, nor that it is infallible. However, no hesitancy is felt in stating that the writer regards it as preeminently the best method of dealing with those cases which do not respond to the usual forms of treatment advocated for this condition.

When it is considered that seminal vesiculitis is one of the most common complications of gonorrhea and that practically all men have had this disease, with a resultant involvement of the vesicles in fully seventy-five per cent of all cases becoming chronic, it is then realized how prevalent this condition must be.

The tendency of vesicular infection is toward chronicity, for the reason that the natural drainage of the vesicles through the ejaculatory ducts is very poor, causing a retention of purulent material. Belfield states that the ejaculatory ducts have the function of sphincters and never relax until the vesicles become fully distended.

Assuming this to be true, one can understand why, on account of faulty drainage and retention of pus within the vesicles, together with the fact that the ejaculatory ducts are normally closed, preventing medication introducted into the urethra from reaching the seat of infection within the vesicles, that involvement of these sacs must of necessity be a prolonged affair.

Since the vesicles are rarely, if ever, infected without concomitant involvement of the prostate gland and urethra, it follows that these must receive treatment along with the vesicles, if one hopes to obtain results from vas injection. No attempt will be made to state what this treatment should be, as this is a matter of opinion varying with each physician administering it.

Vas injection is indicated in that class of patients who show little or no improvement, fol-

*Read before the Florida East Coast Medical Association, West Palm Beach, Nov. 10, 1927.

lowing massage extending over a reasonable length of time. In acute epididymitis, where an epididymotomy is done, it is thought that vas injection should be administered at the time of the open operation, since they are always infected before the epididymes become involved.

I have employed various salts of silver in solution, in the injection of the seminal vesicles, but my preference is argyrol. When I first began to treat the vesicles by this method, the strength of the solution used was fifteen per cent. The strength was gradually increased to forty per cent, without any evidences of chemical inflammation following its use.

While unable to state that better results were obtained from the use of the stronger solutions, it may be said that there is no danger of chemical inflammation of the vasa and epididymes, due to regurgitation of the injected solution if, after injection, the syringe is detached from the needle still remaining in the lumen of the vas and ten to fifteen minims of distilled water injected behind the medication. This entirely clears the vas and prevents regurgitation of the silver salt. This, of course, dilutes the medication within the vesicle, but provision may be made for this by increasing the strength of the solution. Since instituting this procedure, no case of chemical funiculitis or epididymitis has developed, whereas before they were of frequent occurrence.

TECHNIQUE

Personally, it has always been found necessary to make an incision through the skin of the scrotum, isolate and bring the vas through the opening, fix and entirely denude it of all its coverings, in order to enter its lumen.

A certain urologist of Chicago injects by a method he styles "percutaneous puncture of the vas deferens." He says: "To insert a needle into the lumen of the vas deferens without making a cut through the scrotal skin, demands an exact technique." No hesitancy is felt in stating that this is true, and no embarrassment is entertained when stating that this "exact technique" has not been reached by me. I am satisfied to enter the lumen of the vas and inject without infiltration, when perfectly exposed and stripped of all its coverings.

No hydrocele has resulted from this form of treatment, nor is it believed that it causes occlusion of the vas, if properly performed. Every patient who showed spermatozoa in the secretions prior to operation, showed them following vas injection.

In this connection, it may be stated that the secretions of some of these patients did not show spermatozoa, either motile or nonmotile, prior to operation, who did show them after recovery. The secretions of many patients who have a long-standing vesiculitis, fail to show the presence of spermatozoa, whose vasa are patent. In such patients, occlusion can not be advanced as a cause for the absence of spermatozoa.

This question is often asked: "If a single injection of the vasa be sufficient to eradicate infection in the seminal vesicles, why does not a similar injection destroy infection in the urethra? This is a logical question, but if one recalls the histological difference between the mucous membrane of the vesicles and that of the urethra, one can appreciate the difference between infection of the vesicle, which has no mucous glands, and that of the urethra, which has many, wherein the infecting micro-organisms may remain hidden. In addition, one should recall that the seminal vesicle is a single canal having numerous diverticulæ, and when the canal and its diverticulæ are completely filled with medication, it is retained within the canal for weeks. On the other hand, when the urethra is injected, medication does not penetrate the ducts of the numerous glands, thereby coming in contact with the micro-organisms, and is rapidly drained from the urethra.

That it does remain for weeks within the vesicles, is proved by the fact that not infrequently patients state they have erotic dreams and emissions as long as a month or more after injection, and their night clothes are stained black by the argyrol, mixed with the seminal emission.

In April of 1922, I reported a series of 101 patients treated by this method, in a paper read before the Tennessee State Medical Association, at Memphis, Tennessee. Since that time, I have used this method in the treatment of a much larger number than I originally reported, but the results in these subsequent patients will conform to those obtained in this former series, so I shall give a synopsis of the results of treatment in this series of 101 patients reported.

Only eight patients in this series received more than one injection. Seven of these received two each, and the remaining one received three. Two of the seven given the second, as well as the pa-

tient receiving the third, are placed in the class listed below as "unimproved." Another of the unimproved had a bilateral occlusion of the vasa, but claimed never to have had epididymitis. The vasa were exposed as high as the external rings and several punctures made along their course, but I was unable to inject them.

The results are as follows:

Sixty-seven became culturally and microscopically free of infection, and clinically cured.

Eighteen showed improvement, but still harbored the infection.

Nine were unimproved.

Seven passed from under observation before sufficient time had elapsed in which to determine the end results.

Not all of these patients were venereals, as nine denied all history of gonorrhea, three of which will be reported in detail. The secondary arthritis is the point of interest in the first case.

Case No. 38—A. H., age 26, came to me in August, 1919. Denied all history of gonorrhea, but stated that during December, 1917, while stationed at Camp Gordon, Georgia, he developed a nonspecific urethritis. Was examined daily by army physicians, but no gonococci were found. This urethritis was mild in character and only persisted for about twelve days. A month later, or during January, 1918, he developed an arthritis of right knee joint, which necessitated his being put to bed in a hospital. He stated that the knee was greatly swollen and the pain was intense. Kept in the hospital until August, 1918, at which time he was given his disability discharge, in line of duty. He had a recurrence of the urethral discharge twice while in the hospital, but a few irrigations controlled it on both occasions.

On physical examination, the right knee was found to be swollen, with a bursa immediately below the patella. He was unable to bear his weight on this leg and was forced to walk with the aid of a cane. X-ray examination did not show any structural changes. Patient would not permit much manipulation of the joint on account of the pain. Urine contained pus shreds, which on being centrifuged, fixed and stained, showed many pus cells, but no gonococci.

Palpation of the prostate and vesicles, by rectum, showed both vesicles were enlarged and indurated, with no appreciable enlargement of the prostate. Stained secretions from the vesicles and prostate showed numerous pus cells, but no micro-organisms. Upon culture for twenty-four hours, approximately fifty colonies of B. Coli were demonstrated. Autogenous vaccines were given him, along with daily irrigations, and bi-weekly massage. This line of treatment was continued until November, 1919, at which time, as there was no material improvement in his condition, the vesicles were injected with a twenty per cent solution of freshly prepared argyrol.

He was kept in bed for a week following operation, and then told to report at office daily for urethral irrigations. Four weeks after injection, bi-weekly massage of the prostate and vesicles was resumed.

At this time there was a decided improvement in his knee involvement and he was able to walk without the use of a cane. Ninety days after injection, microscopic findings as well as cultures were negative. The end result was complete cure.

The second case was a hematogenous infection of the vesicles, secondary to kidney involvement. The interesting feature in this case was impotence as a result of vesiculitis.

Case No. 54.—R. G., age 24. Referred to me in September, 1920, for treatment of pyelonephritis. His history was that while serving overseas as a soldier with the 82nd Division, in 1919, developed kidney trouble as a result of exposure and was confined to the hospital for six weeks. Had been cystoscoped and kidneys lavaged on various occasions.

At cystoscopy, separate urines were obtained by ureteral catherization for culture. These showed colonies of staphylococcus albus, which disappeared after the ninth lavage.

After the kidney urines cleared up, the voided urine contained many pus cells and shreds. He denied all history of venereal infection, but stated that for almost a year before coming to me, had been unable to raise an erection, and had been subjected to much embarrassment and humiliation on three different occasions, when attempting it and failing.

Prostate and vesicles were found on palpation to be enlarged and very tender. The massaged secretions showed many pus cells, with an entire absence of organisms. Cultures demonstrated approximately 150 colonies of staphylococcus albus; urethroscopic examination revealed a chronically inflamed verumontanum, about twice its natural size. This was treated with topical applications of nitrate of silver through the ure-

throscope, and the vesicles and prostate massaged twice weekly. He was treated in this manner until January, 1921, at which time the verumontanum appeared normal, but there was not much improvement in the condition of the vesicles, so vas injection was resorted to. Microscopic findings sixty days later demonstrated the presence of an occasional pus cell, whereas, on culture, eight or ten colonies of staph. albus were grown. He was given the second injection, and after forty days the massaged secretions failed to show the presence of pus, and cultures were negative. He was ordered not to attempt sexual intercourse for six months, and suggestion was used to the extent of assuring him that he would be in as good physical condition as he was prior to his army experience. Encouragement, together wth vesicle injection, has fully restored him, according to his own version.

The third case comes under the classification enumerated by Thomas and Pancoast (Annals of Surgery, Vol. XL), who state: "The seminal vesicles, too often disregarded and neglected, if not forgotten, have not received the consideration which is their due as a foci of infection, and in the near future will be their demand, especially at the hands of neurologists, orthopædists and internists. We refer to a vast array of conditions with a symptom-complex too little understood, as acute and chronic synovitis, and arthritis of an infectious and toxic nature, so-called articular or even muscular rheumatism, rheumatoid arthritis, arthritis deformans, gout, hypertrophic arthritis, chronic bladder disturbances, recurrent epididymitis, impotency, renal and cardiac complications, digestive disturbances and an ensemble of mental and nervous manifestations almost incredible of belief.

Case No. 73.—R. L., age 52. This patient had been treated for conditions ranging from sciatica to hip-joint disease. For the past two years had been practically an invalid, being unable to arise from a chair without assistance, and requiring the aid of two canes when attempting to walk. He denied all history of venereal disease. Had a generalized rheumatic condition for the past five years, pain especially severe in lumbar regions and radiating down the legs on locomotion. Physical examination revealed a large boggy prostate and indurated vesicles, which were massaged with great pain to the patient. The secretions, upon microscopic examination, showed many pus and red blood cells. Many extra-cellular gram positive bacilli were found on stained smears. Upon culture, the organisms were isolated and found to be diphtheroid bacillus and staphylococcus pyogenes aureus. Bi-weekly massage along with daily irrigations of potassium permanganate were given over a period of two months, with no apparent improvement in the patient's condition, from the microscopic standpoint. A vas injection was then resorted to, with the result that within twenty days a decided improvement in the patient's condition was noted. Microscopic examination showed a fair amount of pus, but a disappearance of organisms on direct smear. Cultures, however, showed after twenty-four hours' incubation, a few colonies of the same organisms. The second injection of the vas was made forty-five days after the first, followed by rapid improvement. The general physical condition was benefited, with rapid subsidence of all rheumatic pains and he began to walk without the assistance of canes. Ninety days following the second injection the patient returned home. Stained smears at this time did not reveal pus and cultures were negative to all organisms.

SUMMARY.

1. Vas injection is indicated in acute seminal vesiculitis, accompanied by urinary symptoms, chief among which is, retention, massage being contraindicated on account of the acute fulminating process.

2. In all cases of acute epididymitis where epididymotomy is indicated, vaso-puncture and injection is also indicated.

3. All chronic cases of seminal vesiculitis not responding to treatment, such as massage and other forms of treatment recommended for this condition, should be injected.

4. Patients manifesting symptoms of joint involvement with infection of the seminal vesicles improve under this form of treatment.

ORAL FOCI OF INFECTION*

Jos. B. Game, Jr., D.D.S.,
Tallahassee.

The importance of locating foci of infection in the human body and of eradicating them has only been recognized generally in the past few years. Even after the fact was known that toxins could cause and aggravate many ills no

*Read before the joint meeting of the Leon-Gadsden-Liberty-Wakulla-Jefferson County Medical Society and the Northwest District Dental Society, Chattahoochee, Oct. 11, 1928.

attention was given to the oral cavity in that connection.

There was a time a few years ago when abscessed teeth, decayed teeth, pyorrhea, ill fitting fixed or removable bridge work, were given little thought except when they produced pain. And in spite of all the research and clinical work that has been done, and all of the articles which have been written, and of all the lectures which have been given, I am afraid that about all the average dentist or physician looks for are the abscessed teeth and teeth which have already been ruined by pyorrhea.

I am no "one hundred per center," I have a few nonvital teeth myself, radiographically they seem to be in good condition now, and you can just bet that I am going to hang on to them just as long as I am in good shape physically. However, if I ever do go down with neuritis or arthritis or for any other cause which might be produced or aggravated by a possible production of pus, even if I can't find a granuloma on each one as big as a pecan they are coming out. It has been demonstrated time and again that a radiograph can not plainly show a rarified area which is on the side of a root, and if I were ill I should take no chances.

We can stand up under quite a strain as long as we are well, but it doesn't take so much to keep us down when we are once down.

I saw a patient the other day who has just passed a fine examination for a $25,000.00 life insurance policy—he said he felt like a top and had not been ill for ten years. Upon raying his mouth I found nine teeth apparently carrying so-called "chronic abscesses"; four of them were clearly established fistulæ.

Of course, we can be fairly certain that if that man became ill the fact that the oral cavity was in such bad condition probably would have been against his normal recovery.

Just as this one man seems to remain healthy in spite of anything, there are others who can stand very little. We do not expect every piece of machinery to carry the same load, nor do we expect every beam or pillar to support the same strain.

As people differ in the amount of mental strain they can live under, just so do they differ in the amount of physical strain they can live under—I do not mean in direct proportion, of course.

The fact that it seems impossible to kill one patient with anything less than an axe or dynamite cannot be offered as a reason an ill-fitting bridge or a couple of shell crowns cannot put another patient down and out.

Dr. John Callahan, the originator of the chloco-percha-resin method of canal filling, used to refer to shell crowns as "mother hubbards," and described the fit of the average crown as comparing to the way a milk bucket fits a post when it is turned over it to dry.

I wonder how many dentists have held their noses when they removed a shell crown which had been in place a few months or a few years? I assure you that I have never come across one which reminded me of a rose arbor, and I am certain that this cannot be called a healthy mouth condition.

I think that all too often we receive a patient who has been referred by a physician with a request for a complete oral examination, and either tell the patient that we already know all about the condition existing in his, or her, mouth and go no further, or do examine the mouth and finally say "there is only one doubtful tooth and I don't think that just one tooth would cause all this trouble." We cannot know that only one tooth is not causing the trouble until we remove it as a possible source of trouble and see the final results.

Then again, in the examination we find decayed teeth, overhanging margins on fillings, ill-fitting fixed and removable bridges which are veritable sewer traps and say nothing. Part of this fault is with the physician, for if he would leave all diagnosis of dental ills to the dentist, and offer no opinions to the patient or the dentist there could be no opportunity for the dentist having to disagree with an opinion which has been expressed to the patient by the physician.

I might suggest that the physicians and the dentists come to an agreement—let no dentist attempt to treat pneumonia and no physician attempt to treat pyorrhea.

I know that I shall get myself criticised now by both physicians and dentists. Fully fifty per cent (and I feel like raising the figure) of the dental radiographs made are not capable of aiding in a diagnosis, and a radiograph at best can only be an aid.

I have seen radiographs, and now have many in my files that I do not believe you could ever guess by looking at them just what part of the mouth they are supposed to show.

I had thought for a while of using a lantern

and some slides. I am sure you could get a good many laughs out of the slides; possibly some day I can inflict them on the dentists of this group and not bother the physicians.

A short time ago I received a set of ten radiographs purporting to be a full radiographic examination of a mouth of thirty teeth. There should have been at least fifteen exposures—from fifteen to thirty are necessary according to Raper and Simpson—however, the written diagnosis which accompanied these spoiled films was astounding. So many dreadful things were found that I wondered if the poor patient might not even die before I could get her out of the office. After looking her over I decided that she was even strong enough for me to make a check set of films for comparison.

In the accompanying diagnosis the two lower second bicuspids had "blind abscesses" on them, examination showed two normal live teeth that happened to be so placed in the arch that the mental foramina were superimposed on their apices on the films. The upper bicuspids and molars were supposed to be involved in one large abscess or cyst; examination of the mouth and the check films showed the shadows of the molar and floor of the maxillary artra were responsible for the illusion.

Now this poor patient had already had the bad news broken to her, and she had read the horrible sentence also; so what was I to do?

I knew that if I told her what I thought was necessary, just one filling and a thorough prophylaxis, I would be called a liar by her physician who was much better known to her than I was. So I decided to temper the wind a bit and after a lot of hot air got her right groggy. I filled the cavity, cleaned up her mouth a bit and took out an upper third molar that was out of line and doing no good. You see she just had to lose a tooth or two to feel good. I wound up by giving her a certain mouth wash that has a taste which should make her forget all her other troubles.

Now, if that physician says that I can't cure abscessed teeth with a mouth wash we will be even, for I say that he could not find one with his X-ray, and if he cannot find them he can't know whether I cured them or not.

One more crack at the physicians and then the dentists get it. The manager of a supply house in Atlanta, and who happens to be an old friend of mine, knew that I was going to make a trip through the country and pass through a certain town, so he sent me a letter he had just received and asked me to stop by and see if I could help the doctor out a bit. This physician wrote in and asked for larger dental films than the No. 1 regular, as he found them too short to get a full length tooth on. But I'll risk a dime that he was charging for an examination and making a diagnosis from the films.

Right here I must save my own hide. Tallahassee is too small, my family is too large, and I've too many friends to talk about the Tallahassee physicians. You may be certain that no Tallahassee physician ever wrote that diagnosis or letter. We get along too well over there for anything like that.

Now for the dentists. If you look only for teeth that are abscessed, carrying granulomata which are radiographically evident, when you are trying to put a mouth in healthy condition, either while assisting a physician to clear up trouble or while doing what you should do with every patient who comes to you for a complete examination, you are failing in your duty to your patient. Granulomata are a common source of trouble, but I do not believe they are the most common.

I believe the bridge work of the type that was in style during the Spanish-American war and which is used to quite an extent today, is as much to blame as anything else. Also I believe that the reason so many patients who have gone trustingly to their dentist, allowed him to do as he would, and then been disappointed because they did not get the results they hoped for, is that the dentist limited his work to removal of the abscessed teeth, and then shined up the rest of the teeth a bit, patted the patient on the back and wished him well.

I know that when you suggest cutting out ragged overhanging fillings you are frequently told that they are not bothering just now and the patient wants to leave that work for some indefinite later time.

If you suggest the removal of the 1776 bridge work which is a trap for decomposing food particles, the patient then thinks you are broke or need a new car or want a trip to Cuba, and so puts you in a general class with the gold-diggers and medical specialists.

I am aware that I have been cussed and pointed out as one who wanted to get all that could be gotten out of the old pocketbook, but

when a patient comes to me referred by a physician and I understand that the physician wants to eliminate all unhealthy mouth conditions I do not hesitate to tell him just what it will require. If he says that he doesn't want all of that work done I try to explain just how he is hurting himself and hindering the physician, usually winding up by saying that "if you will not have all the needed work done, I will do all that you think you want done and then write a complete statement of the facts to your physician, then if you don't get along so well later on you cannot blame either of us."

That usually takes all the wind out of their sails, and even if I do get roundly cussed frequently, when the patient does leave the office he is not in ignorance of the true conditions to be found in his mouth as I see them. That is something anyway.

I believe that there is really only one difference between a good dentist and a poor dentist, attention to detail in your diagnostic work, preparatory work and restorative work.

All of us know a clean mouth when we see it, but I am afraid that some of us are not differentiating between a pathologically clean and unclean mouth and so in this way are failing in our duty to our patients when they look to us for aid.

In quite a few cases that you may see the patient is not financially able to have all the indicated work done, but all cavities can be filled with cement, all broken down or diseased teeth extracted and all food traps removed. The patient then will be left in a far better condition than he was in, for if chewing surface is broken up by your work at least the body does not have to fight the toxins found in a dirty mouth.

If I have rambled around quite a bit and hit the subject from corners you will forgive me, for thick books have been written on the same subject. I have made no effort to bring into this paper the scientific data which has been assembled through thousands of clinical tests and reports.

Of course, I am not speaking about you and your patients; it is the other fellow and his patients who are in trouble.

NOTICE!

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of the

Florida Medical Association

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OUR GUESTS ARE COMING

November, 1929, will mark seventeen years since the Southern Medical Association met in Florida. This was before most of us could claim ourselves Floridians. At the recent Asheville meeting the Association accepted our invitation to meet in Miami. Representatives from various committees of our State pledged the committee selecting a meeting place a welcome that can never be forgotten. We must keep our promise.

Since Miami happens to be in the southeast corner of these Southern States there might be some uneasiness as to the size of the attendance. The Southern Medical Association, the second largest medical association in the world, is accustomed to a registration of two to three thousand. It should be the pride of every member of the Florida Medical Association to see this usual attendance surpassed. Simple this would be if every member would take an out-of-the-State guest along with him. Miami says she will do her part. In no other southern city are there more adequate hotel accommodations or more

convenient arrangements for the comfort of guests. She has assured the Committee that there will be no restrictions upon facilities for having a good time.

When the Southern Medical Association meets in Miami every Florida doctor who is not registered there will be missing a profitable, enjoyable time, an opportunity to help the State, and a part in the bettering of organized medicine in Florida.

Let's all be there to welcome our guests.

EFFECTS OF CLIMATE

So much has been said and written in regard to the beneficent results of Florida climate that as medical men, we are apt to overlook certain of the less desirable effects of a subtropical climate. It is well for the physician to recognize the disadvantages and better still to be able to cope with them when certain illnesses and indispositions arise with climate as the important etiological factor.

In the September issue of the "Archives of Internal Medicine," C. A. Mills describes a symptom complex noted in Peking, China, which he considers as a climatic effect due to functional adrenal inadequacy. His observations are noteworthy in that he suggests relatively simple measures for their relief and reports several cases which showed unusual response by the oral administration of adrenalin.

In the September issue of this Journal, a somewhat similar group of cases were analyzed under the caption "Personal Observation on Certain Cases of Asthenia in Southern Florida." It is probable that the difference between the syndrome described by Mills and the similar syndrome found in asthenics in Florida is only a question of degree. The use of adrenalin by mouth is effective especially when the drug is protected from oxidation by glucose, and from digestion by being administered with a considerable quantity of water on an empty stomach.

It is of interest that these symptoms of asthenia arise chiefly during our summer months when the climate is strictly tropical.

STATE NEWS ITEMS

The Scientific Program Committee is now preparing the program for our next meeting which is to be held in April at St. Augustine. The Committee consists of Drs. G. H. Edwards, Orlando, chairman; J. D. Love, Jacksonville, and A. M. C. Jobson, Tampa. Those desiring a place on the program should communicate without delay with the chairman of the committee, giving the title of the paper he wishes to present, together with an abstract of the contents. The applicant is also requested to suggest the names of those he desires to discuss the paper. If you wish to read a paper at the next annual meeting, do not delay writing the chairman of the Scientific Program Committee.

* * *

The members of the Florida Medical Association will be delighted to know that Miami has been selected as the next meeting place of the Southern Medical Association, to be held in November, 1929. The Dade County Medical Society, together with the other component societies of the Florida Medical Association, will put forth every effort to make this the most successful meeting the Southern Medical Association has ever held. It is many years since the Southern Medical Association has met in Florida, the last meeting being held in Jacksonville in 1912. In order to secure the meeting for Miami, the Dade County Medical Society sent many of their members to Asheville and they are to be congratulated on their success.

* * *

Dr. Edward Jelks, Jacksonville, was elected president of the Duval County Medical Society for the coming year at the annual meeting held at the Duval County Hospital Tuesday evening, December 4th. Dr. Luther Holloway, Jacksonville, was elected vice-president; Dr. Kenneth Morris, Jacksonville, secretary, and Dr. W. M. Shaw, Jacksonville, treasurer. Dr. S. E. Driskell, Jacksonville, retiring president, was elected to membership on the Board of Governors. The work of the past year was reviewed at the meeting and reports showed that much had been accomplished in a constructive way. The magazine Hygeia was placed in fifty schools in Duval County and the County Society contributed $200 for the relief of the storm sufferers in southern Florida. Realizing the need for better health measures, the Society endorsed the new milk bill before the City Council. This bill is essentially the same as the one authorized by the United States Public Health Service. A representative from the Society has been present at each meeting of the City Planning Commission which, it was asserted, is doing much to beautify Jacksonville.

(*Continued on page* 312)

Are you taking advantage of Knox Sparkling Gelatine—

a valuable dietary adjunct for diabetic patients?

BECAUSE plain unflavored gelatine blends perfectly with all fruits, vegetables, meat and fish, it is ideally suited to lend variety and palatability to the diabetic diet. Portions too small to serve alone can be made into satisfactory dishes with the addition of Knox Sparkling Gelatine.

With Knox Sparkling Gelatine a number of pleasing variations can be introduced into the diabetic diet—dishes that have high protein or fat value, are appetizing, and impart a sense of satiety to the patient. Made plain and pure—unbleached, without flavoring, coloring, or sugar content, Knox Sparkling Gelatine is an ideal food for the purpose. These qualities, also, make it a desirable means of lessening the monotony of liquid and soft diets in general.

In infant feeding, the protective colloidal ability of Knox Sparkling Gelatine in overcoming imperfect milk digestion has long been known. Exhaustive tests have proved that the addition of 1% of pure, unflavored gelatine to cow's milk tends to prevent regurgitation, gas, colic, diarrhea, and malnutrition. In fact, Downey has demonstrated that the addition of gelatine increases the available nourishment of milk mixture, by about 23%.

Knox Sparkling Gelatine is manufactured by a concern with 40 years of experience in making this one product. From raw material to finished product, every step in its manufacture is under constant chemical and scientific control. The most sanitary conditions prevail throughout the factory.

Valuable booklets on dietetics available

The booklets included below have been prepared by recognized dietetic authorities. They contain important data on the use of Knox Sparkling Gelatine in the various diets, together with recipes for a variety of tempting, appetizing dishes. Surgeons, doctors, dieticians, and members of hospital staffs will find them valuable references. Check those you would like to have and mail us the coupon.

CAUTION!

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- ☐ Diet in the Treatment of Diabetes
- ☐ The Value of Gelatine in Infant and Child Feeding
- ☐ The Health Value of Knox Sparkling Gelatine

Name_____ Address_____

City_____ State_____

Dr. R. F. McLeod, formerly of Greenwood, recently moved his office to Madison.

* * *

At the last monthly meeting of the Woman's Auxiliary of the St. Vincent's Hospital, Jacksonville, it was voted to erect a memorial bulkhead around the hospital property, facing the St. Johns River. The following officers were elected by the Auxiliary: Mrs. Frederick J. Waas, president; Mrs. J. K. McIver, Sr., vice-president, and Mrs. W. McL. Shaw, treasurer.

* * *

The Volusia County Medical Society held its regular monthly meeting at the Magnolia Tea Room, New Smyrna, Tuesday, October 9th, at 6:30 p. m. Dr. J. E. Rawlings of Daytona Beach gave a very interesting talk on European Clinics, most of which he has visited in the past two years while he has been abroad. The Woman's Auxiliary of the Volusia County Medical Society also held their meeting at the same place. Before the meetings, eighteen doctors and their wives, with a few stags, enjoyed a duck dinner.

* * *

Dr. Max Ghertler announces the removal of his offices from 270 N. E. 23d St. to 1715 S. W. 11th St., Miami.

* * *

On December 5, 1928, Judge Lake Jones, Federal Judge of the Northern District of Florida, sentenced J. E. Roberts to serve seven years in the Federal Penitentiary, Atlanta, for using the mails to defraud. Roberts is a negro claiming to be able to cure tuberculosis, cancer and many other diseases by medicine of his own make, which he sent through the mails. His headquarters were at Armstrong, Florida. Roberts plead guilty to seven counts. This case has been of unusual interest due to his nefarious advertisement and special mention should be given to Dr. L. F. Kehler, Washington, D. C., who had charge of the collaboration work for the postal department and the department of Justice; also to Mr. D. F. Angeer, postal inspector from Washington, D. C., who worked up test correspondence, leading to a fraud order which resulted in the indictment. Our local inspector, Mr. T. H. Jerry, who worked so hard for the conviction of Dr. Geo. A. Munch in Tampa last fall, secured the local evidence in the case. Roberts came to Florida about three years ago from North Carolina.

Colonel James L. Young of Plant City, father of Dr. C. T. Young, former president of the State Board of Health, died recently in his home city at the age of 81.

* * *

The regular quarterly meeting of the Leon-Gadsden-Liberty-Wakulla-Jefferson County Medical Society was held at Chattahoochee on October 11th. This was a combined meeting of the medical society and the Northwest District Dental Society. The following program was rendered:

"Hysterectomy versus Suspension in Selected Cases"—C. K. Wall, M.D., Thomasville, Ga.

"The Role and Rationale of Oral Focal Infection"—C. J. Caraballo, D.D.S., Tampa.

"Pellagra with Psychoses"—J. H. Pound, M.D., Chattahoochee.

"Focal Infection from a Dentist's Viewpoint"—B. V. Danheiser, D.D.S., Pensacola.

"Tuberculosis of the Kidney"—F. E. Davis, M. D., Chattahoochee.

"Oral Foci of Infection"—J. B. Game, D.D.S., Tallahassee.

* * *

Dr. Eugene B. Elder resigned as superintendent of the Morrell Memorial Hospital of Lakeland to accept the superintendency of the Knoxville General Hospital, Knoxville, Tenn. Dr. Walter A. Weed will succeed Dr. Elder as superintendent of the Morrell Memorial Hospital.

* * *

Dr. L. M. Anderson of Lake City was among those who attended the Interstate Post-Graduate Assembly in Atlanta recently.

* * *

Dr. Foster P. Key of Green Cove Springs had a narrow escape from injury this past month when his automobile collided with a truck.

* * *

Dr. W. A. Claxton, assistant city director of public welfare of Miami, recently resigned his position.

* * *

Born to Dr. and Mrs. J. D. Parker of Stuart, a daughter, on September 21st.

(*Continued on page* 314)

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DURING the long Arctic night man survives stiffening cold because he knows how to protect himself. Not only does he wear thick furs but, in his limited dietary, fats predominate, affording him not only fuel for body heat but the needed Vitamins A and D as well.

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DETROIT, MICHIGAN

The next annual Clinical Congress of the American College of Surgeons will be held in Chicago, October 14 to 18, 1929.

* * *

Dr. T. H. Bates of Lake City has recently returned from a several weeks' trip with his family visiting relatives in Texas. While away, Dr. Bates attended clinics in Houston and New Orleans.

EDMUND W. WEIS

Dr. Edmund W. Weis of DeLand died suddenly November 2nd of angina pectoris. Dr. Weis practiced in Ottowa, Illinois, for 39 years. The last few years he has resided in DeLand, where he had a host of friends. He was a member of a number of medical societies, including the American Medical Association, American College of Surgeons, Florida Medical Association and the Volusia County Medical Society.

Drs. T. W. Langley, A. W. Knox and G. S. Selman of Sanford attended the Interstate Post-Graduate Assembly recently held in Atlanta.

* * *

A daughter was born to Dr. and Mrs. Silas Morgan Copeland of Jacksonville on September 26th. The little girl has been named Merle.

* * *

The State Board of Medical Examiners met at Marianna November 12 and 13, with the following members present: Dr. E. G. Peek, Ocala, president; Dr. J. M. Mann, Lake Butler, vice-president; Dr. W. M. Rowlett, Tampa, secretary, and Drs. Thos. W. Hutson, Miami; N. A. Baltzell, Marianna; J. D. Raborn, St. Petersburg, and T. D. Vassar, Lakeland.

* * *

Dr. G. H. Withers of Miami announces the removal of his offices to the Aladdin Bldg., Miami Beach.

* * *

Dr. Blackburn W. Lowry of Tampa was married to Miss Helen Jean Heffron, October 27, 1928, in "The Little Church Around the Corner," New York City. Mrs. Lowry is a native of Sewickley, Pa., a suburb of Pittsburgh, and has been a frequent visitor in Tampa during the past five years.

(*Continued on page* 316)

CONSTIPATION

In the Breast-Fed Infant

HORLICK'S MALTED MILK has long been used with success in the prevention and correction of constipation among breast-fed infants

For the Nursing Mother—

Many doctors advise the nursing mother to drink regularly each day three glasses of Horlick's—**the Original**—Malted Milk, knowing that she will add to her own store of energy, increase the flow of her breast milk and provide her child with the food elements which result in regular bowel movements daily.

For the Breast-fed Baby—

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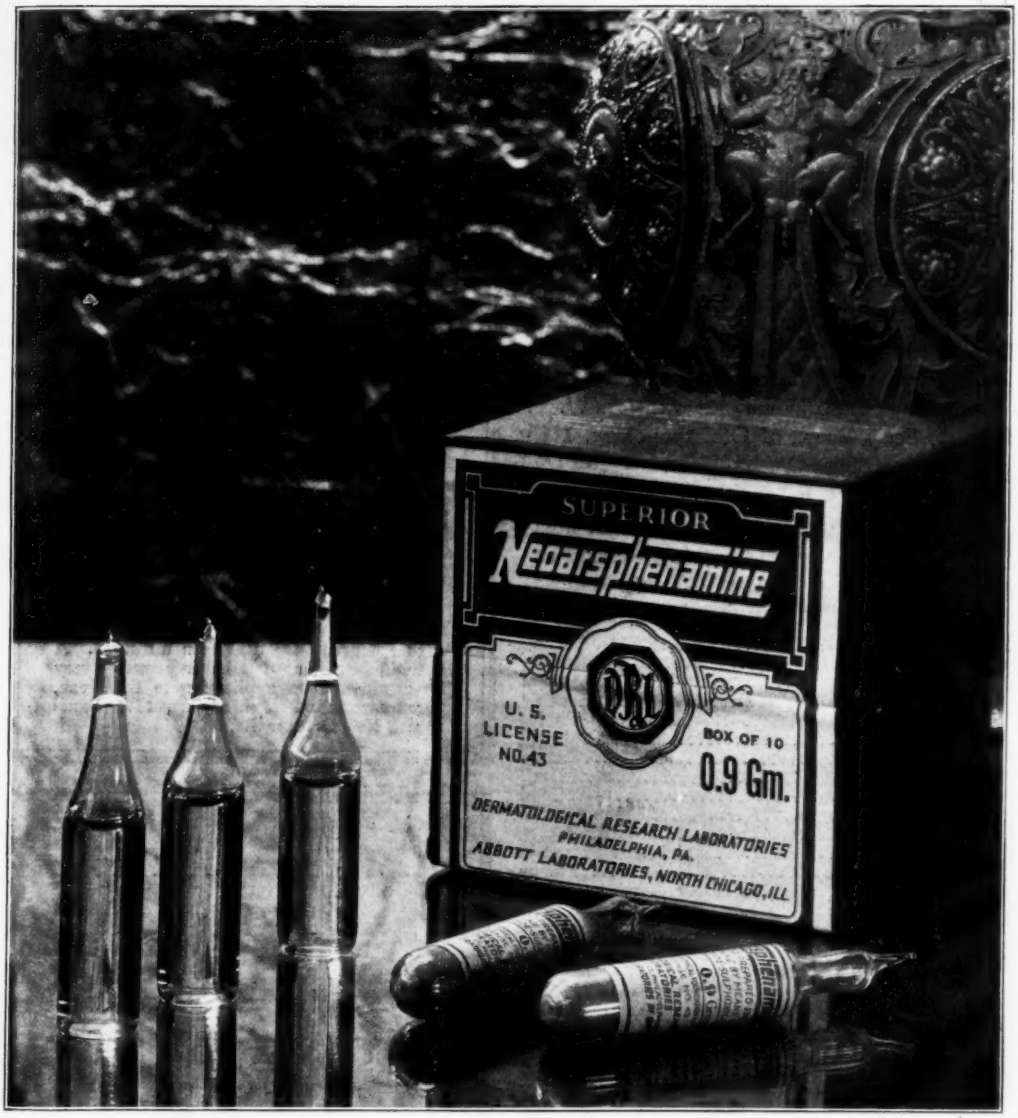
DR. JAS. N. BRAWNER, Medical Director.
DR. ALBERT F. BRAWNER, Resident Physician.



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The American Board of Otolaryngology held an examination in New York City October 11th. One hundred and thirty applicants were examined; one hundred and thirteen were passed.

An examination was held in St. Louis, October 15th. Seventy-nine were examined; sixty-eight were passed.

The Board will hold an examination in Portland, Oregon, Monday, July 8th, during the session of the American Medical Association, and in Philadelphia in October preceding the American Academy meeting in Atlantic City.

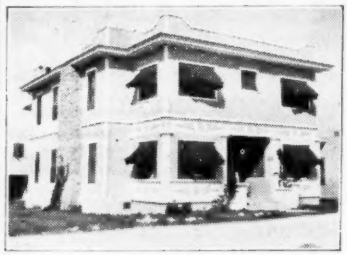
Those desiring information relative to the above will please communicate with Dr. W. P. Wherry, Sec'y Board of Otolaryngology, 1500 Medical Arts Bldg., Omaha, Nebr.

* * *

The following members of the Florida Medical Association attended the twenty-second annual meeting of the Southern Medical Association, recently held at Asheville, North Carolina:

Adamson, W. P. ..... Tampa
Arms, B. L. ..... Jacksonville
Babcock, D. T. ..... Miami
Beggs, John Miller ..... Chattahoochee
Benton, G. H. ..... Coral Gables
Brinson, W. D. ..... Baldwin
Carlton, Leland F. ..... Tampa
Claxton, W. A. ..... Miami
Coplan, Milton M. ..... Miami
Copp, F. A. ..... Jacksonville
Feaster, O. O. ..... St. Petersburg
Fellows, James H. ..... Pensacola
Forbes, S. B. ..... Tampa
Harris, D. W. ..... Miami
Heinberg, C. J. ..... Pensacola
Jones, Walter C. ..... Miami
Kirby-Smith, J. L. ..... Jacksonville
Knowlton, R. H. ..... St. Petersburg
Limbaugh, Louie ..... Jacksonville
Litterer, A. Buist ..... Miami
Love, J. D. ..... Jacksonville
Marr, N. M. ..... St. Petersburg
Merryday, H. L. ..... Daytona Beach
Miller, R. L. ..... Graceville
Milton, J. D. ..... Miami
Murrow, J. S. ..... Apalachicola
Panettiere, Cayetano ..... Miami Beach
Payne, W. C. ..... Pensacola
Pearson, Homer L. ..... Miami
Peyton, Harry A. ..... Jacksonville
Shaw, E. Clay ..... Miami
Simmons, John A. ..... Miami
Simpson, J. Knox ..... Jacksonville
Smith, D. T. ..... Gainesville
Smith, H. Mason ..... Tampa
Smith, Marvin H. ..... Miami
Snyder, J. W. ..... Miami
Strickland, J. A. ..... St. Petersburg
Taylor, H. M. ..... Jacksonville
Taylor, Joseph W. ..... Tampa
Turberville, J. S. ..... Century
Waas, F. J. ..... Jacksonville
Watters, William H. ..... Coconut Grove
Webb, Carol C. ..... Pensacola
Williams, Carl A. ..... St. Petersburg
Woodard, R. C. ..... Miami

(*Continued on page* 318)



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Mellin's Food increases carbohydrates in the highly assimilable form of maltose and dextrins.

Mellin's Food adds mineral matter derived from wheat and barley and consisting of potassium, calcium, sodium, magnesium, phosphatic salts and iron, all in a form readily utilized for the development of bone structure and for the regulation of various functions of the body.

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Dr. M. A. Lischkoff has returned to Pensacola after spending the past month in Philadelphia, St. Louis, Baltimore and New York. While in St. Louis he participated in the meeting of the American Academy of Ophthalmology and Otolaryngology.

* * *

The next congress of the Pan-American Medical Association will be held in Havana, Cuba, from December 29, 1928, to January 3, 1929. The program which is being arranged by the president, Dr. Fred H. Albee of New York City, will be a strong one, and will include four orations, upon the subjects of surgery, medicine, pediatrics, and tropical medicine.

Dr. William J. Mayo will give the Oration on Surgery, and Dr. Lewellys Barker of Johns Hopkins University the Oration on Medicine. Papers will be read in both Spanish and English.

This congress will be representative of the medical profession of the entire Western Hemisphere. Chapters of the Association have been and are being organized in various centers of North America and Central America, as well as in the Antilles, all of which will be represented at the Congress.

One of the recent accomplishments of the Pan-American Medical Association is the establishment of the Pan-American Hospital in New York City for the benefit of the Latin-speaking people.

A large attendance is solicited.

* * *

The regular monthly meeting of the Duval County Medical Society was held at the Duval County Hospital, Jacksonville, Tuesday evening, November 6th. The scientific program consisted of two interesting papers: "Menorrhagias," by Dr. Thos. Fields, and "Radium Therapy in Uterine Hemorrhage," by Dr. Gerry Holden. Ways and means of improving the attendance at meetings was discussed. As an experiment, it was decided to hold the January meeting at the new Jacksonville Chamber of Commerce.

WANTED—Location or connection in Florida by Class A specialist in eye, ear, nose and throat. Has a record of 14 years' ethical and successful specialized practice. Member of the American Academy of Ophthalmology and Oto-Laryngology, etc. Will buy established practice or join a clinic or partner or open an office in a new or old field. Will pay for information leading to a desirable opening.
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